



COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
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GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

April 19, 2011

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, California 90012

ADOPTED

BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES

#40 APRIL 19, 2011

Sachi A. Hamai
SACHI A. HAMAI
EXECUTIVE OFFICER

Dear Supervisors:

DOMINGUEZ GAP BARRIER PROJECT CONDITION ASSESSMENT COOPERATIVE AGREEMENT (SUPERVISORIAL DISTRICTS 2 AND 4) (3 VOTES)

SUBJECT

This action is to enter into a cooperative agreement with the City of Los Angeles Department of Water and Power and the Water Replenishment District of Southern California to perform a condition assessment of the Dominguez Gap Barrier Project.

IT IS RECOMMENDED THAT YOUR BOARD ACTING AS THE GOVERNING BODY OF THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT:

1. Find that entering into this cooperative agreement is exempt from the provisions of the California Environmental Quality Act.
2. Authorize the Chief Engineer of the Los Angeles County Flood Control District or her Designee to enter into a cooperative agreement with the City of Los Angeles Department of Water and Power and the Water Replenishment District of Southern California to perform a condition assessment of the Dominguez Gap Barrier Project. The total cost of the project is estimated to be \$999,000 and will be financed with the Fiscal Year 2010-11 Flood Control District Fund Budget. Under this cooperative agreement, the City of Los Angeles Department of Water and Power and the Water Replenishment District of Southern California will each reimburse the Los Angeles County Flood Control District for one-third of the cost to perform the study, up to \$333,000 each.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The purpose of the recommended actions is to enter into an agreement to perform a condition assessment of the Dominguez Gap Barrier Project (DGBP) infrastructure. The assessment will recommend repairs, improvements, and measures to prevent future shutdowns in an effort to protect the underground water supply source from seawater intrusion. The County of Los Angeles Department of Public Works (Public Works) will return to your Board of Supervisors (Board) requesting approval to award the consultant services agreement for the condition assessment.

Implementation of Strategic Plan Goals

The Countywide Strategic Plan directs the provisions of Operational Effectiveness (Goal 1) and Community and Municipal Services (Goal 3). The recommended actions will help achieve these goals by maximizing the effectiveness of County infrastructure and ensuring the County's residents receive quality infrastructure services. The Los Angeles County Flood Control District (LACFCD) will receive reimbursement funding for two-thirds of the cost to perform the assessment, up to \$666,000.

FISCAL IMPACT/FINANCING

There will be no impact to the County General Fund.

The total cost of the condition assessment is estimated to be \$999,000 and will be financed with the Fiscal Year 2010-11 Flood Control District Fund Budget. Under this cooperative agreement, the City of Los Angeles Department of Water and Power (LADWP) and the Water Replenishment District of Southern California (WRD) will each reimburse LACFCD for one-third of the cost to perform the assessment, up to \$333,000 each.

FACTS AND PROVISIONS/LEGAL REQUIREMENTS

LACFCD is the lead agency for the condition assessment and will be reimbursed one-third of the cost to perform the assessment from each participating agency. A cooperative agreement substantially similar to the cooperative agreement enclosed as Exhibit A, which has been approved as to form by County Counsel, will be used to collect funds from the LADWP and the WRD.

LACFCD owns and operates the DGBP which consists of injection wells, observation wells, water supply lines, pressure-reduction facilities, and related appurtenances for the purpose of injecting water. Freshwater and recycled water is injected into the underlying aquifers to develop a pressure ridge that prevents seawater from intruding into and degrading the underground source of potable water supply. Due to the age and recent repairs to the DGBP, the LACFCD seeks to assess the condition of selected wells, the water supply lines, valves, and appurtenances through a consultant services agreement. Public Works will return to your Board requesting approval to award the consultant services agreement.

ENVIRONMENTAL DOCUMENTATION

Entering into the cooperative agreement for the condition assessment is statutorily exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15262 of the CEQA guidelines. This exemption provides for feasibility or planning studies for possible future actions, which have not been approved, adopted, or funded.

IMPACT ON CURRENT SERVICES (OR PROJECTS)

The condition assessment will evaluate the DGBP infrastructure and recommend repairs and improvements to LACFCD's infrastructure to protect our groundwater supply from seawater intrusion.

CONCLUSION

Please return one adopted copy of this letter to the Department of Public Works, Water Resources Division.

Respectfully submitted,

A handwritten signature in black ink that reads "Gail Farber". The signature is written in a cursive, flowing style.

GAIL FARBER
Director

GF:CS:abc

Enclosures

c: Chief Executive Office (Rita Robinson)
County Counsel
Executive Office

Joint Funding Agreement
“Condition Assessment of the Dominguez Gap Barrier Project”
Among
Los Angeles Department of Water and Power,
Los Angeles County Flood Control District, and
Water Replenishment District of Southern California

Joint Funding Agreement
“Condition Assessment of the Dominguez Gap Barrier Project”
Among
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Water Replenishment District of Southern California,

THIS FUNDING AGREEMENT (Agreement), is entered into by and among the Los Angeles Department of Water and Power (LADWP), Los Angeles County Flood Control District (LACFCD), and Water Replenishment District of Southern California (WRD), collectively referred to as "Parties" or individually as "Party" to fund a condition assessment of the Dominguez Gap Barrier Project.

Recitals

WHEREAS, the County of Los Angeles is home to approximately 10 million residents who depend on reliable sources of water; and

WHEREAS, approximately two-thirds of the water supply of the County of Los Angeles is imported from sources outside of the region; and

WHEREAS, in addition to imported water, the water supply also depends on groundwater that is recharged from a variety of sources, including injection at the Dominguez Gap Barrier Project (BARRIER); and

WHEREAS, LACFCD is a special district organized and operating under the County of Los Angeles Flood Control Act, Water Code Unified Acts, Act 4463 (hereinafter referred to as Flood Control Act); and

WHEREAS, pursuant to the Flood Control Act, LACFCD is authorized to manage flood control and water conservation facilities within its boundaries, and said efforts include injection of water at the BARRIER to recharge the groundwater basins within the County of Los Angeles, including the subterranean regional aquifer known as the West Coast Groundwater Basin (West Coast Basin); and

WHEREAS, LACFCD owns and operates the BARRIER which consists of injection wells, observation wells, water supply lines, pressure-reduction facilities, and related appurtenances for the purpose of injecting water; including to aid in the replenishment of the water supply of the West Coast Basin to form a hydraulic barrier to prevent seawater from intruding into the West Coast Basin; and

WHEREAS, LADWP's role is to provide clean, reliable water and power and excellent customer service in a safe, environmentally responsible and cost-effective manner to the City of Los Angeles that includes ensuring a reliable supply of potable water for the region; and

WHEREAS, WRD is a special district created pursuant to California Water Code, Section 60000, et seq., adopted by the California legislature in 1955; and

WHEREAS, WRD has operated since 1959, to protect and preserve the quantity and quality of the groundwater supplies in the Central and West Coast groundwater basins, which basins serve as the source of nearly 40 percent of the water used by the 4 million people overlying the WRD's 420-square-mile service area; and

WHEREAS, WRD's mission includes managing and safeguarding the groundwater resources of the West Coast Basin by ensuring its water quality and by maximizing the amount of groundwater in the basins; and

WHEREAS, LADWP supplies both recycled water and imported water, WRD purchases both recycled water and imported water, and LACFCD conveys and injects the water into the BARRIER; and

WHEREAS, LADWP and WRD benefit from the efforts of LACFCD to inject water at the BARRIER to replenish the water supply of the West Coast Basin and to prevent seawater from intruding into the West Coast Basin; and

WHEREAS, LACFCD, LADWP, and WRD desire to perform a condition assessment of the BARRIER to determine if improvements are required to prevent future shutdowns of the BARRIER and to maintain protective groundwater elevations with a high level of efficiency.

Agreement

NOW, THEREFORE, in consideration of the mutual benefits to be derived by LACFCD, LADWP, and WRD, and of the premises herein contained, it is hereby agreed by the Parties as follows:

SECTION 1 - SCOPE OF WORK

The condition assessment of the BARRIER wells and water supply facilities together with its deliverables (Scope of Work), as developed jointly by LACFCD, LADWP, and WRD, are attached hereto as Exhibit A and incorporated herein by this reference.

SECTION 2 - REQUEST FOR PROPOSALS/CONSULTANT SELECTION

LACFCD shall have the authority to hire a third-party consultant ("Consultant") to perform the Scope of Work by means of procurement procedures that satisfy the LACFCD's normal procurement and contract process. At the time of the selection of the Consultant to perform the Scope of Work under this AGREEMENT, LACFCD shall include LADWP and WRD on the proposal selection committee. The selected Consultant shall be awarded a contract to perform the Scope of Work.

SECTION 3 - PAYMENTS

LADWP and WRD shall each be responsible to reimburse LACFCD for Consultant services in the amount not to exceed Three Hundred Thirty Three Thousand Dollars (\$333,000) or one-third of the total amount invoiced by the Consultant, whichever is less. LACFCD shall invoice LADWP and WRD monthly based on invoices it receives from the Consultant. LACFCD shall be responsible for all costs of the Scope of Work in excess of said contributions by LADWP and WRD. LADWP and WRD will not reimburse LACFCD for any additional costs to perform or complete the Scope of Work except pursuant to a written amendment to this Agreement.

SECTION 4 - REPORT OF FINDINGS

LACFCD shall provide both LADWP and WRD with one copy each of the draft report of findings submitted by the Consultant. Comments from LADWP and WRD on the draft report of findings must be submitted to LACFCD within thirty (30) days of LACFCD providing the draft report of findings to be considered for incorporation into the Final Comprehensive Report of Findings. LACFCD shall also provide both LADWP and WRD with one hard copy and one electronic copy each of the Final Comprehensive Report of Findings.

SECTION 5 - NOTICES

Notices required or permitted shall be given by personal delivery or first class mail, postage prepaid, or facsimile transmission to:

LACFCD: County of Los Angeles Department of Public Works
Attention Assistant Deputy Director – Water Resources Division
900 South Fremont Avenue, 2nd Floor
Alhambra, CA 91803-1331

LADWP: Los Angeles Department of Water and Power
Attention Director of Water Resources
111 North Hope Street, Room 1460
Los Angeles, CA 90012
Tel: (213) 367-0873
Fax: (213) 367-1131

WRD: Water Replenishment District of Southern California
Attention General Manager
4040 Paramount Boulevard
Lakewood, CA 90712

SECTION 6 - HOLD HARMLESS

- a. LACFCD shall hold harmless, LADWP and WRD, its officers, employees, representatives and agents against any and all liability, claims, losses, damages, or expenses arising from the negligence or willful misconduct of LACFCD or its officers, employees, representatives or agents in rendering services under this AGREEMENT; excluding, however, such liability, claims, losses, damages, or expenses arising solely from the respective negligent or willful acts of LADWP or WRD, its officers, employees, representatives and agents
- b. LADWP shall hold harmless, LACFCD and WRD, its officers, employees, representatives and agents against any and all liability, claims, losses, damages, or expenses arising from the negligence or willful misconduct of LADWP or its officers, employees, representatives or agents in rendering services under this AGREEMENT; excluding, however, such liability, claims, losses, damages, or expenses arising solely from the respective negligent or willful acts of LACFCD or WRD, its officers, employees, representatives and agents.
- c. WRD shall hold harmless, LACFCD and LADWP, its officers, employees, representatives and agents against any and all liability, claims, losses, damages, or expenses arising from the negligence or willful misconduct of WRD or its officers, employees, representatives or agents in rendering services under this AGREEMENT; excluding, however, such liability, claims, losses, damages, or expenses arising solely from the respective negligent or willful acts of LACFCD or LADWP, its officers, employees, representatives and agents.
- d. Any and all liabilities for third party losses between the parties shall be governed by section 895 et seq. of the Government Code for the State of California.

SECTION 7 – ASSIGNMENT

No one party to this AGREEMENT shall assign, sell, or otherwise transfer any obligation or interest conferred in this AGREEMENT without the specific written consent of the other Parties to this AGREEMENT.

SECTION 8 – APPLICABLE LAW

This AGREEMENT shall be construed in accordance with and governed by the laws of the State of California and action brought relating to this AGREEMENT shall be brought solely in a court of competent jurisdiction in the County of Los Angeles, California.

SECTION 9 – INTEGRATION

This AGREEMENT represents the entire understanding of the parties. No prior oral or written understanding shall be of any force or effect with respect to those matters covered by this AGREEMENT.

SECTION 10 – SEVERABILITY

In the event that any provision herein is held to be invalid by any court of competent jurisdiction, the invalidity of any such provision shall not affect the validity of the remaining provisions of this AGREEMENT, which shall remain in full force and effect.

IN WITNESS WHEREOF, the parties thereto have executed this Memorandum of Understanding to be executed by their duly authorized representatives.

DEPARTMENT OF WATER AND POWER
OF THE CITY OF LOS ANGELES BY
BOARD OF WATER AND POWER COMMISSIONERS OF
THE CITY OF LOS ANGELES

Date: _____

By: _____
Austin Beutner
General Manager

And: _____
Secretary

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed by their duly authorized representatives:

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Date: _____ By: _____
Chief Engineer

APPROVED AS TO FORM:

ANDREA SHERIDAN ORDIN
County Counsel

By _____
Deputy

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed by their duly authorized representatives:

**WATER REPLENISHMENT DISTRICT OF
SOUTHERN CALIFORNIA**

Signature

Print Name

President, Board of Directors

Title

Signature

Print Name

Secretary, Board of Directors

Title

**Approved As To Form
ALSTON + BIRD LLP**

Edward J. Casey
Attorneys for the Water Replenishment
District of Southern California

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SCOPE OF WORK

**CONSULTANT SERVICES TO
PERFORM A CONDITION ASSESSMENT OF
THE DOMINGUEZ GAP BARRIER PROJECT
WELLS AND WATER SUPPLY FACILITIES**

**COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES DIVISION
900 SOUTH FREMONT AVENUE, 2ND FLOOR
ALHAMBRA, CALIFORNIA 91803
TELEPHONE (626) 458-6308
FAX (626) 979-5309**

**CONSULTANT SERVICES TO
PERFORM A CONDITION ASSESSMENT OF
THE DOMINGUEZ GAP BARRIER PROJECT
WELLS AND WATER SUPPLY FACILITIES**

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**CONSULTANT SERVICES TO
PERFORM A CONDITION ASSESSMENT OF
THE DOMINGUEZ GAP BARRIER PROJECT
WELLS AND WATER SUPPLY FACILITIES**

1. OBJECTIVE AND INTRODUCTION

1.1 Objective

The County of Los Angeles Department of Public Works (Public Works), acting on behalf of the Los Angeles County Flood Control District (LACFCD), seeks to evaluate the condition of the existing wells and water supply facilities associated with the Dominguez Gap Barrier Project (DGBP). The Scope of Work is to include selected portions of the water supply system from the pressure reducing station to the well head connections inside the injection well vaults. The Scope of Work is also to include the evaluation of selected injection and observation wells. Based on information obtained during the progress of work, the condition assessment final report is to include recommendations for any necessary repairs, improvements, and preventative measures.

1.2 Introduction

The seawater intrusion barriers were installed in the early 1950's as an experimental project in response to the overdraft caused by excessive groundwater pumping for a rapidly growing population. The design, construction, and operation of the barriers have been a significant accomplishment in mitigating seawater intrusion into critical coastal aquifers, which serve as an invaluable water source for Southern California residents. There are several local water agencies working together to support the seawater barrier injection and monitoring operations.

The seawater barriers protect a 32,000,000 acre-foot groundwater reservoir from contamination by seawater intrusion. Over five million residents of the Southern California Coastal Plain depend on this groundwater that provides approximately 40 percent of their potable water supply. Besides being the lowest cost water available, this groundwater reservoir serves as a strategic reserve when imported water supplies are interrupted due to drought or delivery system failure.

1.3 Background

Public Works currently operates 3 seawater intrusion barriers, which inject freshwater into the aquifer system in order to create a protective pressure ridge and prevent seawater from contaminating the groundwater. The 3 barriers are the Alamitos Barrier Project (ABP), the DGBP, and the West Coast Basin Barrier Project (WCBBP).

The DGBP water supply line (see Exhibit A, DGBP Overview Map), can be divided into 2 major segments (i.e., the main supply line that runs southerly of Sepulveda Boulevard along the western side of the Dominguez Channel and then westerly along E Street; and the eastern extension line that runs northerly of Sepulveda Boulevard along the eastern side of the Dominguez Channel and then easterly along Spring Street). For this project, the assessment will focus on evaluating the condition of the main supply line. The DGBP also includes 61 manually operated injection wells and 33 automated injection wells that operate continuously at flow rates ranging from 0.05 to 1.0 cubic feet per second (cfs). The total flow rate for the entire DGBP ranges from 7 to 13 cfs based on current needs to satisfactorily protect the groundwater basin. The DGBP also includes a network of 257 observation wells. The injection and observation wells were constructed in phases between 1971 and 2004 and are located in city streets, private properties, and along flood control channel levees. The DGBP Overview Map in Exhibit A also shows the general locations of the injection and observation wells. Exhibit B includes a map depicting the size, location, and material of the DGBP main supply line. In addition, it identifies the locations of other appurtenant structures, such as air and vacuum valves, blowoff valves, isolation valves, and pressure reducing valves.

In March 2003, Corrpro Companies Inc., completed a detailed condition assessment of the water supply pipelines, valves, and appurtenances for all 3 Public Works seawater barriers. Corrpro provided Public Works with an evaluation report (Corrpro Evaluation), which presented their findings and included a list of seawater barrier improvement projects prioritized on the criticalness of the repair. An electronic copy of the Corrpro Evaluation is included on the CD as Exhibit C.

Since 2003, the DGBP has experienced multiple breaks in the water supply line and appurtenances. Additionally, the DGBP began injecting recycled water in 2005, and the recycled water has been shown to have different water quality characteristics than imported water. As a result of these 2 factors, some of the findings presented in the Corrpro Evaluation for the DGBP, may no longer be valid.

2. SCOPE OF WORK

This Scope of Work is provided as a guide to achieve the objective stated in Section 1.1. The consultant shall obtain, review, organize, and incorporate any information pertinent to the study and design. The services to be performed by the consultant shall include, but not necessarily be limited to, the following work outlined below. The consultant should recommend work not listed, or any changes, if they are believed to better suit the objective.

2.1 Conduct Field Investigation of the Water Supply Pipeline System

2.1.1 The selected consultant shall meet with representatives from Public Works to discuss the DGBP water supply pipeline system and to identify segments of the pipeline to perform additional field investigations as part of the condition assessment. Public Works will propose a preliminary list of approximately 54 pipeline segments consisting of 27,000 feet of pipe to be included in the field investigations. Items to be discussed will include physical features of the pipeline such as material, age, size, and access locations. Additional topics of discussion will include historical operational issues, past repairs, and previous evaluation reports (e.g., Corpro Evaluation).

2.1.2 Following the meeting, the selected consultant shall perform field reconnaissance in order to gather additional information on the field conditions at the proposed preliminary pipeline segments and at any additional sites that the consultant deems essential to sufficiently assess the condition of the DGBP water supply pipeline. This will assist in determining the feasibility of performing field testing on various segments of the water supply line.

2.1.3 Based on the results of 2.1.1 and 2.1.2, the selected consultant shall submit a technical memorandum providing the following:

2.1.3.1 A revised list identifying approximately 54 DGBP water supply pipeline segments to be evaluated in the field. The list should highlight any changes made to the preliminary list of pipeline segments provided by Public Works under 2.1.1, and include justification for the changes (e.g., higher perceived priority, access limitations, etc).

2.1.3.2 A recommended method or methods to assess the condition of each barrier pipeline segment identified in 2.1.3.1. Methods of assessment shall include electronic, video, acoustic, or other suitable techniques as

appropriate to complete a detailed physical analysis for each type of installed pipe.

- 2.1.4 Upon Public Works approval, the selected consultant shall proceed with assessing the condition of each barrier pipeline segment identified in 2.1.3.1 using the methods proposed in 2.1.3.2. The selected consultant shall coordinate assessment activities with Public Works representatives and be fully responsible for any required permits, traffic control, and complete restoration of each uncovered site and any facilities following the assessment activities.
- 2.1.5 Based on the preliminary results of the field testing performed under task 2.1.4, the selected consultant shall recommend 10 locations to excavate down to the DGBP water supply pipeline to perform a detailed physical analysis. Upon Public Works approval, the selected consultant shall proceed with uncovering the pipe at each of the 10 locations and performing a detailed physical analysis, which will consist of the following:
 - 2.1.5.1 Expose the full circumference of the pipe along a minimum pipe length section of 1 foot and examine it to assess the extent of external corrosion or any visible damage.
 - 2.1.5.2 Measure the wall thickness around the full circumference of the pipe using an appropriate measurement device (e.g., ultrasonic thickness gauge). In addition, measure the depth of any obvious pits in the pipeline.
 - 2.1.5.3 Take photographs of the exposed pipeline to be included in the final report.
 - 2.1.5.4 Collect soil samples from each of the 10 excavation locations and have them analyzed for the same constituents as the soil samples collected as part of the 2003 Corrpro Evaluation. The selected consultant shall also provide a list of any additional constituents to test for, which may assist in determining the condition of the DGBP water supply pipeline. A list of additional constituents shall be submitted to Public Works for review and approval prior to any additional testing.

2.2 Assess Reliability of the Water Supply Pipeline System

2.2.1 Following the successful completion of 2.1 and its subtasks, the selected consultant shall divide the entire DGBP water supply system into sections (segments) by material, age, and size. As

much as possible, the section numbering should be consistent with that in the Corrpro Evaluation, but divided into subsections as necessary.

2.2.2 Based on the results of the field investigations performed under 2.1 and its subtasks, assess and rank the reliability of each section of pipeline.

2.2.3 Develop anticipated life remaining for each section of pipeline.

2.2.4 Assess the ease of repair and replacement of each section. Identify any potential construction issues.

2.2.5 Present conclusions using a matrix format.

2.3 Conduct Field Investigation of the Observation Wells

2.3.1 The selected consultant shall meet with representatives from Public Works to discuss the network of DGBP observation wells in order to select specific wells to perform additional field investigations as part of the condition assessment. Public Works will propose a preliminary list of approximately 100 observation wells to be included in the condition assessment. This task may be combined with 2.1.1. Items to be discussed will include physical features of the observation wells such as material, age, size, and construction. Additional topics of discussion will include available information on casing condition, sediment infill status, and other casing issues.

2.3.2 Based on the results of 2.3.1, the selected consultant shall submit a technical memorandum providing the following:

2.3.2.1 A revised list identifying approximately 100 DGBP observation wells to be evaluated in the field. The list should highlight any changes made to the preliminary list of observation wells provided by Public Works under 2.3.1, and include justification for the changes (e.g., higher perceived priority, access limitations, etc). Emphasis should be placed on internodal observation wells (i.e., observation wells located in-between injection wells). In addition, the list shall include observation wells

that represent each age group, well construction (e.g., single, composite, nested, clustered, etc.), casing material, and aquifer zone.

2.3.2.2 A recommended method or methods to assess the condition of each observation well identified in 2.3.2.1. Methods of assessment shall evaluate:

- casing thickness
- casing and screen deposits (e.g., chemical, physical, and biological)
- overall visual condition of the casing
- condition of the well vault

2.3.2.3 A recommended sequence/schedule to assess the condition of the 100 DGBP observation wells identified in 2.3.2.1.

2.3.3 Upon Public Works approval, assess the condition of each observation well based on the list, method, and sequence/schedule identified in 2.3.2 and its subtasks. The selected consultant shall coordinate assessment activities with Public Works representatives, obtain all necessary permits, and be fully responsible for complete restoration of any facilities following the assessment activities, including damage.

2.4 Assess Reliability of Observation Wells

2.4.1 Following the successful completion of 2.3 and its subtasks, the selected consultant shall divide all the observation wells into categories based on material, age, diameter, and aquifer.

2.4.2 Assess current conditions of the observation wells in each category.

2.4.3 Develop anticipated life remaining for each well.

2.4.4 Rank reliability of each well.

2.4.5 Assess the ease of repair and replacement of each well. As applicable, recommend wells to be replaced, repaired, or destroyed. Identify any potential construction issues.

2.4.6 Present conclusions using a matrix format.

2.5 Conduct Field Investigation of the Injection Wells

- 2.5.1 The selected consultant shall meet with representatives from Public Works to discuss the DGBP injection wells prior to performing additional field investigations as part of the condition assessment. Public Works will propose a preliminary list of approximately 13 injection wells to be included in the condition assessment. This task may be combined with 2.1.1 and 2.3.1. Items to be discussed will include physical features of the injection wells such as material, age, size, and construction. Additional topics of discussion will include available information on casing condition, sediment infill status, and other casing issues.
- 2.5.2 Based on the results of 2.5.1, the selected consultant shall submit a technical memorandum providing the following:
- 2.5.2.1 A revised list identifying approximately 13 DGBP injection wells to be evaluated in the field. The list should highlight any changes made to the preliminary list of injection wells provided by Public Works under 2.5.1, and include justification for the changes (e.g., higher perceived priority, access limitations, etc).
- 2.5.2.2 A recommended method or methods to assess the condition of each injection well. Methods of assessment shall evaluate:
- casing thickness
 - casing and screen deposits (e.g., chemical, physical, and biological)
 - cement bond logs
 - gravel pack density
 - overall visual condition of the casing
 - condition of the well vault
- 2.5.2.3 A recommended sequence/schedule to assess the condition of the DGBP injection wells.
- 2.5.3 Upon Public Works' approval, evaluate the condition of each injection well based on the list, method, and sequence/schedule identified in 2.5.2 and its subtasks. While conducting the investigations, injection wells must not be shutdown for more than 4 consecutive days and no more than 2 injection wells should be shutdown concurrently. Public Works shall turn wells off and on while the consultant shall be responsible for all well casing access, well disassembly, and well reassembly. The consultant shall

coordinate shutdown and assessment activities with Public Works representatives, work within the current needs and schedule of Public Works, obtain any required permits, and be fully responsible for complete restoration of any facilities following the assessment activities, including damage.

2.6 Assess Reliability of Injection Wells

- 2.6.1 Following the successful completion of 2.5 and its subtasks, the selected consultant shall divide the injection wells into categories by material, age, diameter, and aquifer.
- 2.6.2 Assess current conditions of the injection wells in each category.
- 2.6.3 Develop anticipated life remaining for each injection well.
- 2.6.4 Rank reliability of each well.
- 2.6.5 Assess the ease of repair and replacement of each injection well and identify any potential construction issues.
- 2.6.6 Present conclusions using a matrix format.

2.7 Prepare Capital Improvement Plan (CIP)

- 2.7.1 Recommend the type of repairs or replacements necessary for each critical pipeline segment, injection well, and/or observation well. Identify any potential construction issues.
- 2.7.2 Identify a CIP schedule for each repair or replacement identified in the CIP for each critical pipeline segment, injection well, and/or observation well.
- 2.7.3 Provide an itemized cost estimate for each project identified in the CIP. Estimates shall include footnotes addressing all cost basis and assumptions used.

2.8 Assess Hydraulic Conditions of the Water Supply Pipeline System for Future Delivery of 100 Percent Recycled Water

- 2.8.1 The DGBP water supply pipeline has 2 water supply delivery points. The first delivery point is the Metropolitan Water District West Basin 37 water connection located at Alameda Street and 218th Street in the City of Carson, which provides imported water for injection at the DGBP. The second delivery point is the City of Los Angeles Department of Water and Power (LADWP) connection located at Banning Boulevard and E Street in the City of

Los Angeles, which provides recycled water for injection at the DGBP. Under normal operating conditions, the DGBP simultaneously receives water from the West Basin 37 and LADWP connections, or only from the West Basin 37 connection. The selected consultant shall use InfoWater Version 6.5 or newer to prepare a hydraulic model of the entire DGBP water distribution system (i.e., including the eastern extension line) that takes into account the 2 delivery points of water. The hydraulic model shall take into account all the injection wells that make up the barrier, in addition to any other barrier features, which may be necessary to create an accurate hydraulic model of the system. The hydraulic model shall be able to simulate the current scenarios of water being supplied from the West Basin 37 and LADWP connections, in addition to individual injection wells being turned on and off. Each scenario shall include the following:

- 2.8.1.1 Hydraulic profile (i.e., hydraulic grade line, flow, barrier pipe profile, etc.).
 - 2.8.1.2 Potential hydraulic problems along with recommended solutions to improve performance.
 - 2.8.1.3 Potential impacts each scenario has on injection well operations and water supply pipeline appurtenances.
 - 2.8.1.4 The potential for developing a pressure surge or drop in the water supply pipeline during the startup and shutdown of the water being provided by the LADWP connection point.
- 2.8.2 Both the West Basin 37 and LADWP delivery points utilize a pressure reducing valve (PRV) to regulate the flow and pressure of the water being delivered to the DGBP. Historically, there have been times when it appears as though the reaction by one of the PRVs leads to a negative counter-reaction by the other PRV. This has resulted in large oscillations in pressure and flow to the DGBP. Using the results from 2.8.1, in addition to other information related to the PRV, the selected consultant shall evaluate the current PRV configurations/settings and provide any insight/recommendations which could prevent the PRV's from having a negative impact on one another.
- 2.8.3 In anticipation of providing the DGBP with 100 percent recycled water, the selected consultant shall utilize the results from 2.8.1 along with any other pertinent information, to evaluate whether or not the LADWP delivery point can adequately supply the

full demand of the DGBP. If it is determined that the LADWP delivery point cannot provide the full demand of the DGBP, the selected consultant shall provide recommendations on actions that can be taken and projects which can be implemented in order to provide the DGBP with 100 percent recycled water (e.g., construct new infrastructure, delivery points, etc.). Each recommendation shall include the following:

2.8.3.1 A hydraulic analysis which demonstrates the ability to supply the DGBP with 100 percent recycled water.

2.8.3.2 A discussion on alignment and construction issues for any new infrastructure.

2.8.3.3 General cost estimates, schedules, and comparable cost/benefit ratios for each recommendation.

2.8.3.4 A pressure surge analysis which evaluates the impacts of startups and shutdowns of recycled water when it is providing 100 percent of the DGBP demand.

2.8.4 Upon completion of 2.8.1 through 2.8.3, the selected consultant shall provide Public Works with all model and associated files, which were developed during the performance of each of these tasks.

2.9 Prepare Draft and Final Reports

2.9.1 Prepare a draft report of the findings of 2.1 through 2.8 that describes the data gathered, analysis performed, and presents recommendations for improvements to the DGBP distribution system and wells. An electronic copy of the draft report in Microsoft Word and Adobe pdf format, and 6 hard copies (5 bound, 1 unbound) of the report shall be submitted to Public Works for review and comment by LADWP, Water Replenishment District of Southern California (WRD), and Public Works,

2.9.2 Prepare and submit a comprehensive Final Report of Findings. Comments provided by LADWP, WRD, and Public Works on the draft report shall be incorporated into the comprehensive Final Report of Findings. The consultant shall submit to Public Works 6 hard copies (5 bound, 1 unbound) and 2 electronic copies on CD-ROM in Microsoft Word and Adobe pdf format.

2.10 Prepare Conceptual Designs and Concept Reports - OPTIONAL

This task will be performed at Public Works' discretion and only upon written notification from Public Works. The written notification from Public Works shall specify those projects identified by the consultant under 2.7 for which the consultant is to prepare conceptual plans and a concept report. All electronic submittals under this task shall be on CD-ROM in Microsoft Word, Microsoft Excel, and Microstation file format, as appropriate. In addition, the consultant shall also provide an electronic copy on CD-ROM of all submittals under this task in Adobe pdf format.

- 2.10.1 Prepare conceptual plans for each project identified in Public Works' written notification. The conceptual plans shall provide sufficient detail of the proposed project (e.g., simple cross sections, structural details, key elevations, pipe/canal sizes, and slopes, etc.) to enable the reader to easily understand the proposed improvement and operation of the facility/improvement. The conceptual plans shall include a location map that shall show landmarks (e.g., streets, rivers/channels, highways, etc.) in relation to the project.
- 2.10.2 Prepare a concept report for each project identified in Public Works' written notification. Each concept report shall include background information on the facility or location of the proposed facility (whichever is applicable), the need for the proposed project, the proposed improvements, water conservation benefits, cost/benefit ratio, and any multiuse benefits. The concept report shall also identify any required environmental documents or exemptions to comply with the California Environmental Quality Act and the National Environmental Policy Act, needed land or right of way, and any required Federal, State, or local regulatory permits. Finally, each concept report shall also include an estimated time frame for the project's final design (plans, specifications, and estimate) and construction period.
- 2.10.3 Submit 2 CD's with electronic copies of each draft conceptual plan in Adobe pdf format and each draft concept report in Microsoft Word, Microsoft Excel, and Microstation file format, as appropriate. The consultant shall also submit 6 hard copies (5 bound, 1 unbound) to Public Works for review for each project identified.

2.10.4 The consultant shall incorporate Public Works' comments on the draft conceptual plans and reports, and submit 6 hard copies (5 bound, 1 unbound) of each of the final conceptual plans and final concept reports to Public Works. The consultant shall also submit to Public Works electronic copies of the final conceptual plans and concept reports as specified above.

2.11 Prepare Final Design Plans, Specifications, and Estimates - OPTIONAL

This task will be performed at Public Works' discretion and only upon written notification from Public Works. All submittals under this task shall be on CD-ROM in Microsoft Word, Microsoft Excel, and Microstation file format, as appropriate. In addition, the consultant shall provide an electronic copy on CD-ROM of all submittals under this task in Adobe pdf format.

- 2.11.1 Prepare 60 percent design plans based on the conceptual plans and concept report prepared under 2.10. The consultant shall submit 3 full size (24 inch by 36 inch) and 3 reduced size (11 inch by 17 inch) sets of plans to Public Works for review.
- 2.11.2 Prepare draft technical specifications for the 60 percent design plans, and submit 6 hard copies (5 bound, 1 unbound) to Public Works for review. The draft technical specifications shall include, but not be limited to, equipment specifications, warranties and technical support, testing, and calibration procedures.
- 2.11.3 Prepare a draft cost estimate (i.e., Engineer's Estimate) for the 60 percent design plans and submit 6 hard copies (5 bound, 1 unbound) of the cost estimate to Public Works for review.
- 2.11.4 Following Public Works' review and approval of the 60 percent design plans, specifications, and cost estimate, incorporate all modifications requested by Public Works into the 90 percent plans, specifications, and cost estimate. Consultant shall submit 3 full size (24 inch by 36 inch) and 3 reduced size (11 inch by 17 inch) sets of plans and 6 hard copies (5 bound, 1 unbound) of the revised specifications and cost estimate to Public Works for review and approval.
- 2.11.5 Following Public Works' review and approval of the 90 percent design plans, specifications, and cost estimate, incorporate all modifications requested by Public Works into draft final plans, specifications, and cost estimate. Consultant shall submit 3 full size (24 inch by 36 inch) and 3 reduced size

(11 inch by 17 inch) sets of plans and 6 hard copies (5 bound, 1 unbound) of the revised specifications and cost estimate to Public Works for review and approval.

- 2.11.6 Following Public Works' review and approval of the draft final plans, specifications, and cost estimate, incorporate all modifications requested by Public Works into final plans, specifications, and cost estimate. Consultant shall submit 3 full size (24 inch by 36 inch) and 3 reduced size (11 inch by 17 inch) sets of plans, and 6 hard copies (5 bound, 1 unbound) of the final specifications and cost estimate to Public Works. The consultant shall also submit electronic copies of the final plans, specifications, and cost estimate to Public Works as specified above.

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